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FAILURE-INDUCED CHANGE AND THREAT-RIGIDITY UNDER ECONOMIC ADVERSITY: THE CASE OF INSIDER VS. OUTSIDER CEO SUCCESSION

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Threat-rigidity effects (Staw, Sandelands, and Dutton, 1981) and failure-induced change (March and Simon, 1958; Cyert and March, 1963) have been proposed as alternative explanations for organizational responses to economic adversity. In the former theory, adversity, defined as perceived threat or loss to the entity, leads to restrictions in information processing, constriction in control, and increased rigidity in organizations. In the latter, adversity, defined as failure to meet an organization's level of aspirations, leads to problemistic search, and organizational learning. Previous attempts to empirically adjudicate between the two theories (Singh, 1986; Boeker and Goodstein, 1991) have found greater support for failure-induced change than for threat-rigidity. But these studies have not explained the contradictory empirical findings that have been used to support and test the threat-rigidity cycle. Early empirical support was found in qualitative studies of failures of firm to adapt to changes in the current environment (Starbuck, Greve, and Hedberg, 1978). The threat-rigidity thesis has also served as a primary explanation in studies of organizational decline (Cameron, Kim, and Whetten, 1987; D'Aveni, 1989). D'Aveni and MacMillan (1990) found that organizations facing adversity were more likely to limit information processing and augmented inertial tendencies. The underlying paradox between the two set of theories remains unresolved (McKinley, 1993).

This paper proposes an approach to reconciling the conflicting theories and findings of failure-induced change and threat-rigidity. Rather than attemptng to adjudicate between the two theories, I argue that economic adversity leads to neither generalized failure-induced change nor to generalized threat-rigidity. I argue instead that the effects of economic adversity on the rate and direction of organizational change is conditioned by organizational conventions and past

practices, as encoded in organizational scripts (Schank and Abelson, 1977). Consistent with theories of failure-induced change, economic adversity will trigger organizational change, designed to address the problems of poor economic performance. But consistent with the threat-rigidity response, adversity will restrict information processing and lead to the adoption of dominant responses, expressed in terms of well-scripted conventions and practices readily available in organizational memory (Walsh and Ungson, 1991).

This paper studies the proposed reconciliation in the context of the selection of insiders vs. outsiders as CEOs. Past studies have provided conflicting results on the effects of adversity on the selection of CEO type. Boeker and Goodstein (1993) found that the selection of outsiders as CEOs was more likely under conditions of poor economic performance. Dalton and Kesner (1985) failed to find the expected relationship, and observed instead that outside successions occurring only in firms characterized by "midrange performance." Canella and Lubatkin (1993) found that adversity leads to outsider succession in the case of CEO dismissals, but failed to find statistically significant effects for other types of succession.

This paper proposes that the selection of CEOs reflects the use and availability of organizational scripts on the appropriateness of different types of CEOs, and that these scripts are shaped both by the generalized conventions of U.S. corporations, and by the past experience and practices of individual corporations. Adversity does not lead to generalized change in CEO type nor to generalized stability. Under conditions of adversity, organizations will seek to change in response to performance problems, but these changes will be biased in the direction of organizational conventions and past practices, as in the case of CEO succession.

Organizational scripts result both from past experience of the organization and from the experience of other organizations in its sector or field. Prior adoption of a program in an organization increases its availability in organizational memory, and this knowledge becomes encoded in the form of organizational scripts that link sequences of action to environmental stimuli. With the organizational adoption of a program of action, it becomes embedded in the memory of the organization and its members. In the event of a subsequent opportunity for organizational decision-making, the probability that the this type of solution will be invoked by organizational participants is likely to increase. Organizational restructuring, strategic reorientations and top management turnover are all examples of programs of action that when successfully adopted become more salient in organizational memory and increase the likelihood of subsequent adoption.

The repertoire of scripts in organizational memory relies not just on organizational-level experience, but on a broader set of practices, skills, and routines learned from the organization's sector or field. Organizations capture the past experience of other organizations and incorporate them into organizational memory (Levitt and March, 1988). In the case of ambiguity, organizations rely on and mimic the experience of other organizations that are facing or have faced similar conditions (DiMaggio and Powell, 1983). Prior diffusion of a plan of action in the organizational field increases the availability of the solution in organizational memory. Faced with decision-making opportunities, participants look not only to the organization's own experience but to that of other organizations with which they are familiar. The wider and the more accepted the diffusion of a particular program of action, the greater the rate of adoption of

THEORY AND HYPOTHESES

Organizations develop a repertoire of programs and plans of actions to respond to diverse environmental stimuli (March and Simon, 1958). This repertoire is developed both internally in the organization and from mimetic processes in the organizational sector or field (DiMaggio and Powell, 1983). At the level of individual cognition, these programs are maintained in memory in form of schemas and scripts. Schemas are used to describe structures of generic knowledge, stored in memory (Rumelhart, 1984). Schemas represent our knowledge about rules, concepts, categories, events, goals, skills, social situations, actions, people, groups, etc. Scripts are a particular form of schema (Schank and Abelson, 1977) that encode knowledge about stereotypic event sequences, and provide guides for action in regular and routine situations. Boundedly rational individuals do not consider all alternative plans of action, but rely on scripts to guide their behavior, and limit the set of actions that are to be considered. At the level of the organization, repertoires of action become encoded in organizational memory in the form of organizational conventions and practices, readily available solutions used to respond to environmental contingencies.

Theories of failure-induced change and threat-rigidity both argue that economic adversity will shift the attention focus of the organization. Failure to meet aspiration levels will lead to problemistic search (Cyert and March, 1963) and to increased attention to solving the problems of adversity with decreased attention to peripheral cues in the environment (Staw, Sandelands, and Dutton, 1981). But consistent with threat-rigidity effects, adversity leads to restriction in information processing, and narrowing of attention to well-learned and well-scripted organizational responses (Zajonc, 1965; Staw, Sandelands, and Dutton, 1981).

Organizations use and develop scripts to provide sequences of organizational actions and behaviors that address the perceived threat of loss to the entity. At the level of organizational subunits and functions, firms develop specialized scripts to increase sales, reduce costs, layoff employees, and to restore economic performance. But the application of conventional scripts at the subunit level is not always successful. Consequently, corporate-wide changes, including executive succession, are used to resolve problems of economic adversity. The removal of corporate executives is a common script invoked to respond to failures in organizational performance (Boeker, 1992). Adversity increases reliance on available scripts, and the removal of corporate executives provides a well-learned solution to the problems of adversity.

This paper focus on the selection of outsiders as CEOs as a well-scripted solution to the problems of poor economic performance. Although the selection of insiders as CEOs is the dominant organizational response in U.S. corporations, this response is conditional on the firm's economic performance. The generalized script for selection of CEO type implies that in the case of economic adversity, outsiders are better able than insiders to restore the firm's economic performance. This convention is based on the perception by board members in U.S. industry that adversity calls for a change in corporate strategy, and that outsiders are more likely to lead to strategic change (Lorsch, 1989; Walsh and Seward, 1991; Canella and Lubatkin, 1993). Yet, the effectiveness of either selecting an insider or an outsider for addressing the performance problems of a corporation facing economic adversity is uncertain. While the predominant evidence is that outsider succession is likely to increase organizational change (Carlson, 1962; Brady and Helmich, 1984; Beatty and Zajac, 1987), the effects of outsider succession on

CEOs had higher levels of economic performance than those with outsiders. And the selection of outsiders as CEOs (as well as outsiders) tends to results in decreased stock-market value for the firm (Beatty and Zajac, 1987). Given ambiguous situations, organizations will increased reliance on readily-available scripts, and on past organizational conventions and practices.

Hypothesis 1a: Prior experience with outsider succession will increase the rate of subsequent outsider succession.

Hypothesis 1b Prior experience with insider succession will increase the rate of subsequent insider succession.

Prior organizational experience with a successor type increases its availability in organizational memory. Organizations are continually at risk for CEO succession due to environmental contingencies, internal organizational processes, and career dynamics of incumbents. Prior experience with insider or outsider succession embeds in memory an insider or outsider succession script and increases the likelihood that this particular type of successor will be selected. This effect occurs independently of firm performance.

Hypothesis 2: Economic adversity increases the rate of outsider succession.

In the United States, the selection of outsiders as CEOs is a well-scripted solution to the problem of economic adversity. Outsiders may be selected under adversity as a result of mimetic isomorphic processes and independently of the particular experience of the firm under consideration. A pure model of failure-induced change would imply that firms with past insiders as CEOs will likely change to outsiders; firms with past outsiders as CEOs would likely change to insiders. A pure threat-rigidity model would argue that firms would decrease their rate of both insider and outsider succession under economic adversity. In the proposed reconciliation,

estimates to their standard errors and computing t-statistics (Tuma and Hannan, 1984). The competing risk model estimates the transition rates to two alternative events, insider succession and outsider succession. The competing risk formulation estimates separate hazard rate models for insider and outsider succession.

Several alternative specifications of duration-dependence were tested, including the exponential, Gompertz, and the Weibull models. Although the models are not nested, the chi-squares of the estimated Weibull models were significantly larger than the exponential or Gompertz, indicating a better statistical fit. Consequently, the Weibull model was used.

Sample. A random sample of 120 U.S. industrial corporations listed in the *Moody's Industrial Directory* for 1980 was selected for the analysis. The unit of observation will be the company year, covering the years 1960-1990. Given lack of financial data for six of the companies in the original sample, the sample was reduced to 114 companies. Not all companies had data for the complete time period. Many were founded and/ or became publicly held after 1960. Many others merged, became bankrupt, went private, or otherwise ceased to be publicly held companies during the decade of the 1980s. The total sample used included 2,391 company-years of data.

Independent variables and succession events. *CEO Turnover*. CEO succession events were coded from *Standard and Poor's Directory of Corporations, Officers, and Director's* based on changes in the names of the relevant officers. A total of 225 succession events were observed during the 2,391 company-years of data in the sample. *Performance.* Data on return on assets (ROA), adjusted for industry averages, were obtained from COMPUSTAT. *Past Succession*

economic adversity invokes the use of generalized scripts for executive succession in U.S. industrial firms. This results in a generalized increase in outsider succession under adversity.

Hypothesis 3a: Prior experience with outsider succession will interact with economic adversity to increase the rate of subsequent outsider succession.

Hypothesis 3b: Prior experience with insider succession will interact with economic adversity to increase the rate of subsequent insider succession.

The proposed reconciliation between theories of failure-induced change and threat-rigidity argues that economic adversity triggers increased reliance on past organizational practices. Hypotheses 3a and 3b capture the effects of past succession experience of each firm on the availability of scripts for succession, and their mediating effects on economic adversity. Past succession experience interacts with economic adversity to increase the rate of insider and outsider succession, respectively. These hypotheses extend previous analysis of the effect of economic performance on executive succession by highlighting the moderating effect of past organizational practices.

MODEL, DATA, AND RESULTS

Model. A competing risk model of outsider vs. insider succession was used to examine the increased reliance on organizational conventions and past practices for the selection of CEO type. The competing risk model estimates separate equations for insider and outsider succession as a function of the independent variables. I test the hypotheses by specifying continuous-time, event history analysis, estimated by maximum likelihood methods. This technique is analogous to multivariate regression where the dependent variable is the transition rate from one state to another. As in multivariate regression, hypothesis testing is conducted by comparing coefficient

previously officers of the corporation for at least two years. Because the CEO transition process is often undertaken in steps (Vancil, 1987), with corporate and board appointments as part of the transition period, the classification system used allows for a two year transition period. A total of 164 insider succession and 61 outsider successions were observed. The classification of insider vs. outsider status was obtained from *Standard and Poor's Directory of Corporations, Officers, and Directors,* supplemented by *Who's Who in Commerce and Industry,* corporate 10Ks, proxy statements and annual reports.

Control variables. *Age*. The age of the CEO during the current year. Age is expected to have a positive effect on the rate of CEO succession. *Tenure*. This variable measures the number of years the incumbent serves as CEO, and is used to measure the duration of the CEO's tenure. To address the problem of left-censoring, prior CEO tenure is recorded for all incumbents in 1960, or for the first incumbent in the sample for each company. *Size*. Measured as the logarithm of the number of employees as reported in *Compustat. Time Trend.* This variable measures the calendar years elapsed since 1960, and is intended to capture historical trends in the rate of CEO succession. A positive trend is expected. Founder. A dummy variable coded as 1, if the CEO is the founding CEO, and 0 otherwise, is included in the analysis. This variable is expected to capture the differential power of a founding CEO, and is expected to have a negative effect on the rate of CEO succession.

Data sources. Data on performance and size were obtained from *Compustat.* All other data were obtained from *Standard and Poor's Directory of Corporations, Officers, and Directors*, and supplemented by proxy statements, 10Ks, and annual reports. All variables,

except financial and employment data were recorded at the beginning of the year. Financial and employment data used were lagged one fiscal year.

Results. Table 1 presents the results of the competing risk models of insider vs. outsider succession. Separate coefficients are shown for the models estimating the rate of transition to an insider and the rate of transition to an outsider. Two models are presented: Model 1 includes the control variables, plus the economic performance measure, return on assets adjusted for industry average; Model 2 adds the effects of past insider succession, past outsider succession, and their interaction effects with economic performance. The age variable is positive and significant at the .05 level in the case of insider succession, but not significant for outsider succession. Time trend is positive and significant at the .10 level for outsider succession in Model 1. Size, measured by the log of employees, is positive and significant at the .01 level for insider succession in both Models 1 and 2; size has a negative effect on the rate of outsider succession in both Models, statistically significant at the .01 level. Tenure (the Weibull time factor) is positive and significant at the .01 level, so that both insider and outsider succession are higher with increased CEO tenure, even after controlling for age.

Contrasting Models 1 and 2 shows a chi-square contrast of 42.35 with 8 degrees of freedom. This difference is statistically significant at the .001 level. Consequently, this implies that the effects of past succession experience are an important moderating influence on the selection of insider and outsiders as CEOs. Hypothesis 1a, on prior experience with outsider succession increasing subsequent rates of outsider CEOs, receives strong support. The coefficient of past insider succession affecting the rate of insider succession is positive as predicted by Hypothesis 1b, but the effect is not statistically significant. Hypotheses 2 is strongly supported,

with the effects of economic adversity increasing outsider succession, statistically significant at the .01 level. No statistically significant effects were found on the rate of insider succession. The interaction effect of past outsider succession and economic performance is positive and statistically significant, contrary to Hypothesis 3a. The interaction effect on past insider succession and economic performance is negative and statistically significant at the .10 level, consistent with Hypothesis 3b.

These results are best understood if we examine their effects graphically. Figure 1 shows the combined effects of return on assets, past succession experience, and their interaction effects on the rate of insider succession. The effects are shown in the curves for past insider succession, past outsider succession, and no succession experience. As predicted by the theory, the effects of adversity on succession are moderated by past experience. In the case of adversity, organizational change will occur in the direction of well-learned dominant responses. Past insider succession will increase the rate of subsequent insider succession under adversity. In the other two cases, where there is no prior experience with insider succession, and where a generalized convention for insider succession does not exist. the rate of insider succession will decrease under conditions of adversity, consistent with a threat-rigidity response.

Figure 2 presents the combined effects of return on assets, past succession experience, and their interaction on the rate of outsider succession. There is a strong main effect on past outsider succession leading to subsequent outsiders, as predicted. But contrary to the initial expectations, the relative effects of adversity on outsider succession are greater for the cases of past insider succession and no succession experience. Except for conditions of very poor

Table 1: Maximum Likelihood Estimates of

Competing Risks of Insider vs. Outsider Succession: Weibull Model

Model	1		2	
	Insider	Outsider	Insider	Outsider
Constant	-7.134***	-6.628***	-7.706***	-7.175***
	(0.981)	(1.647)	(1.043)	(1.633)
Age	0.050***	0.009	0.051***	0.016
	(0.008)	(0.008)	(0.008)	(0.008)
Time Trend	0.015	0.033*	0.016	0.024
	(0.009)	(0.009)	(0.010)	(0.019)
Log of Employees	0.156***	-0.258***	0.120***	-0.245***
	(0.052)	(0.062)	(0.053)	(0.064)
Founder	-0.703***	-0.593	-0.340	-0.214
	(0.258)	(0.408)	(0.447)	(0.570)
Return on Assets (ROA)	-0.010	-0.015***	0.033	-0.097***
	(0.010)	(0.005)	(0.032)	(0.022)
Past Insider Succession	- - -	- - -	0.559	0.068
			(0.388)	(0.395)
Past Outsider Succession	- - -	- - -	-0.153	1.291***
			(0.249)	(0.377)
Past Insider Succession	- - -	- - -	-0.060*	0.025
X ROA			(0.033)	(0.022)
Past Outsider Succession	- - -	- - -	0.015	0.092***
X ROA			(0.022)	(0.022)
Tenure	1.112***	1.079***	1.136***	1.104***
	(0.172)	(0.172)	(0.110)	(0.175)
Chi-Square	250.95	81.95	261.09	114.15
d.o.f.	6	6	10	10
Combined Chi-Square	332.89		375.24	
d.o.f.	12		20	
	* .10 level	**.05 level	***.01 level	

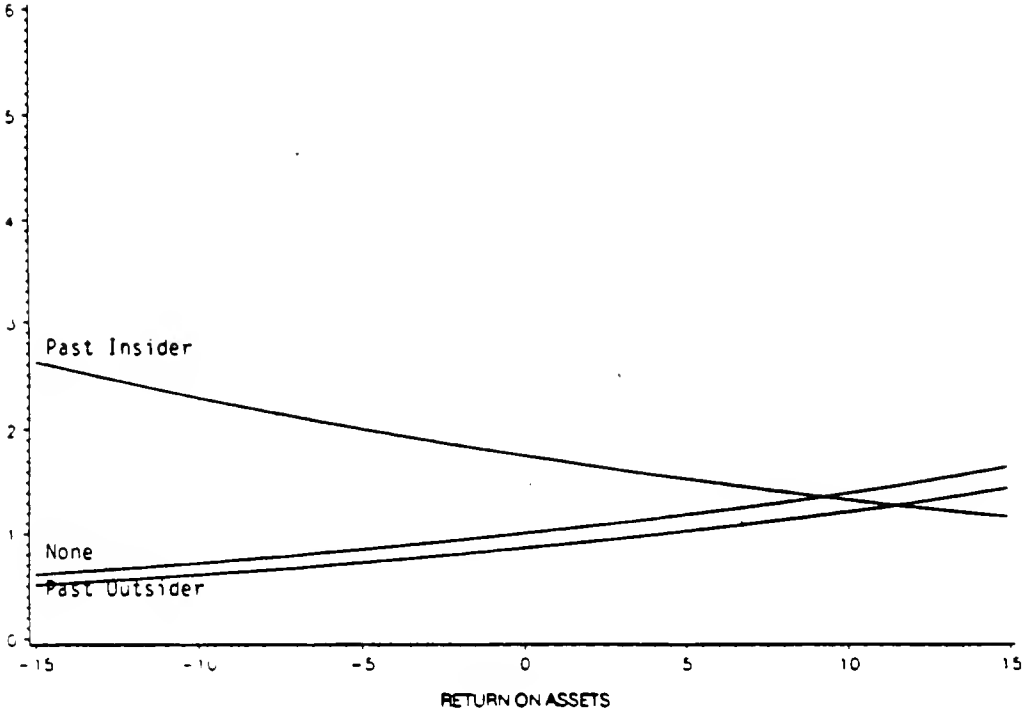
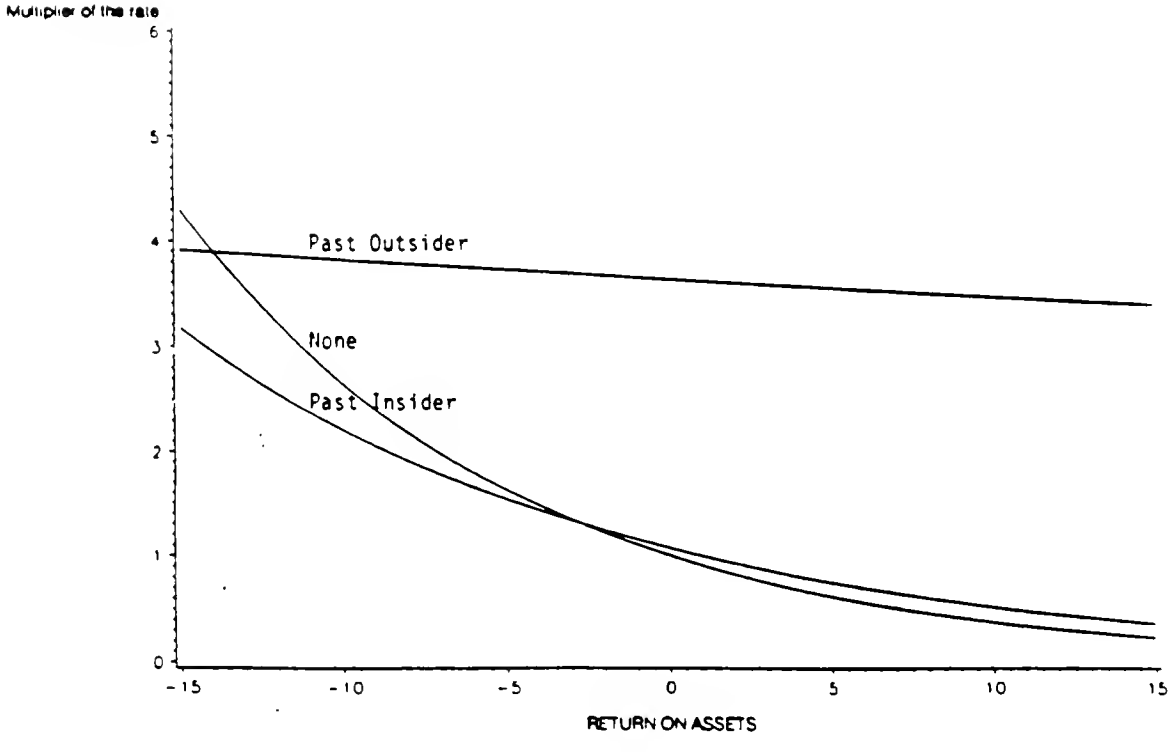


Figure 2

Effects of Return on Assets and Past Succession Experience
on the Rate of Outsider Succession



performance, the net effect is that outsider succession is greater with past outsider experience than under the other two conditions. These results imply that for the case of outsider succession, the effects of generalized scripts for outsider succession under adversity are greater than the effects of past organizational-level experience. Note that the curve for past outsider succession is negatively sloped, as predicted. The problem is not that past outsider succession does not increase subsequent outsider succession under adversity, but that this effect is smaller than in the other two conditions. Past outsider experience creates a momentum for more organizational change of the same type, independently of economic performance. Prior to its initial adoption, outsider succession may be considered an appropriate solution only under conditions of adversity. After its initial adoption, it becomes more widely adopted under all conditions, not just in the case of adversity.

CONCLUSIONS

This paper examines the selection of insiders and outsiders as CEOs and develops and tests a proposed reconciliation to the conflicting predictions and findings of theories of failure-induced change and threat-rigidity. The principal argument is that economic adversity leads to increased organizational change, but change that is biased by increased reliance on organizational conventions and practices. This is supported by the competing risk model of insider and outsider CEO succession. Economic adversity leads to increased succession, consistent with theories of failure-induced change, but change that is biased by dominant responses, consistent with the threat-rigidity hypothesis. As predicted by the theory, the effects of economic adversity are contingent on past history and experience with insider and outsider succession. The results are also consistent with the argument that the rate of outsider succession

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is affected by mimetic institutional process that favor the selection of outsider successors under conditions of adversity. Selection of outsiders under adversity has become a readily available solution to the problem of adversity, even in cases where the organization has not previously experienced with outsiders as chief executives. Past experiences with insiders and outsiders increases the likelihood that a similar choice will be made under conditions of adversity.

Further research in other contexts is required to test how the effects of organizational conventions and past practices may bias the direction of organizational change under economic adversity. While the effects have been tested in the context of insider and outsider succession, other forms of organizational change, such as changes in formal structure, corporate strategy, research and development may be examined. Additional research is also required to distinguish between the effects of dominant responses attained from organizational-level experiences and from mimetic practices and social learning. While the current study sample did not allow for industry differences to be tested, further studies may also distinguish between the effects of generalized conventions, and those specific to organizational fields, sectors, or industry.

The proposed reconciliation between theories of failure-induced change and threat-rigidity is not intended to account fully for all the conflicting predictions and findings of the two theories. Other factors, such as the effects of the social and political structure of decision-making are likely to be important and are subject to further empirical research.

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